

REMARKS

The Office Action of December 29, 2004 has been reviewed and the comments of the U.S. Patent and Trademark Office have been considered. According to the Office Action, claims 1-39 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-31 of copending Application No. 10/029,014. In addition, claims 1-39 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,870,617 to Bourat ("Bourat") in view of WO 00/13776 to Ogle ("Ogle"). Claims 1, 12, 34 and 36 have been amended and claims 9, 20 and 31 had been previously cancelled. Accordingly, claims 1-8, 10-19, 21-30, and 32-39 are pending.

Rejections Under Doctrine of Obviousness-type Double Patenting

Claims 1-39 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-31 of copending Application No. 10/029,014. *See* Detailed Action at page 2. In view of the claim amendments and arguments presented below, Applicants submit that the claims of the instant application are in condition for allowance. If the Examiner is in agreement, Applicants respectfully request withdrawal of the rejection and allowance of the claims while maintaining a provisional double patenting rejection in Application No. 10/029,014. Upon the instant application issuing as a patent, the provisional double patenting rejection can turn into a double patenting rejection. *See* MPEP 804 at 800-19 ("If the 'provisional' double patenting rejection in one application is the only rejection remaining in [the] application, the examiner should then withdraw that rejection and permit the application to issue as a patent, thereby converting the 'provisional' double patenting rejection in the other application(s) into a double patenting rejection at the time the one

application issues as a patent.”)

Rejections Under 35 U.S.C. § 103(a)

According to the Examiner, claims 1-39 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bourat in view of Ogle for reasons of record. *See* Detailed Action at 2. Specifically, the Examiner asserts that the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the disclosure of the Bourat patent with the teachings of the Ogle reference, because the Ogle reference teaches that use of the electrophoresis membrane would allow the purification of the macromolecules as a claimed. *See id.* at 3. Applicants respectfully traverse.

Independent claim 1 has been amended so as to recite, an electrophoresis apparatus comprising, among other features, a first electrode zone, a first membrane and a second membrane disposed between the first electrode zone and the first membrane so as to define a first interstitial volume therebetween “wherein one of the membranes is a barrier membrane capable of controlling substantial bulk movement of liquid under the influence of an electric field, and wherein the other membrane is an electrophoresis separation membrane having a defined pore size; . . . wherein the barrier membrane controls substantial bulk movement of liquid into and out of the first interstitial volume so as to obtain at least a partially concentrated product in the first interstitial volume.”

Independent claim 12 has been amended so as to recite an electrophoresis apparatus comprising, among other features, a first electrode zone, a second electrode zone, a first membrane, a second membrane disposed between the first electrode zone and the first membrane so as to define a first interstitial volume therebetween, and a third membrane disposed

between a second electrode zone and the first membrane so as to define a second interstitial volume, “wherein at least one of the membranes is a barrier membrane capable of controlling bulk movement of liquid under the influence of an electric field and wherein at least one of the membranes is an electrophoresis separation membrane having defined pore size; and . . . wherein the barrier membrane controls substantial bulk movement of any liquid into and out of at least one of the interstitial volumes so as to obtain at least a partially concentrated product in at least one of the interstitial volumes.”

Independent claim 23 recites an electrophoresis system comprising, among other features, a third electrode zone, a fourth membrane, a fifth membrane disposed between the third electrode zone and the fourth membrane so as to define a third interstitial volume therebetween, “wherein at least one of the fourth and fifth membranes is a barrier membrane capable of controlling substantial bulk movement of liquid under the influence of an electric field, and wherein at least one of the membranes is an electrophoresis separation membrane having a defined pore size; . . . wherein the at least one barrier membrane controls substantial bulk movement of any liquid into and out of the third interstitial volume so as to obtain at least a partially concentrated product in the third interstitial volume.”

Independent claim 34 has been amended so as to recite a method for concentrating a sample, the method comprising, among other features, communicating a fluid to a first interstitial to a first interstitial volume defined by a first membrane, a second membrane, “wherein one membrane is a barrier membrane capable of controlling substantial bulk movement of liquid under the influence of an electric field, and wherein the other membrane is an electrophoresis separation membrane having a defined pore size . . . and wherein the barrier

membrane controls substantial bulk movement of any liquid into and out of the first interstitial volume so as to obtain at least a partially concentrated product in the first interstitial volume.”

Independent claim 36 has been amended to recite a method for moving at least one component from a sample while controlling the bulk movement of liquid, the method comprising, among other features, communicating fluids to a first electrode zone and a second electrode zone, communicating fluids to a first interstitial volume and a second interstitial volume, wherein the first interstitial volume is defined by a first membrane disposed in the electric field area and a second membrane disposed between the first electrode zone and the first membrane, wherein the second interstitial volume is defined by the first membrane and a third membrane disposed between the first membrane and the second electrode zone, “wherein at least one membrane is a barrier membrane capable of controlling substantial bulk movement of liquid under the influence of an electric field, and wherein at least one of the membranes is an electrophoresis separation membrane having a defined pore size . . . wherein the barrier membrane controls substantial bulk movement of any liquid into and out of at least one of the interstitial volumes so as to obtain at least a partially concentrated product in at least one of the interstitial volumes.”

Independent claim 38 has been amended so as to recite a method for moving at least one component from a sample while controlling the bulk movement of liquid, the method comprising, among other features, communicating fluids to a first interstitial volume and a second interstitial volume, communicating a fluid to a third interstitial volume defined by a third membrane disposed in the second electric field area and a fifth membrane disposed between the third electrode zone and a fourth membrane, “wherein at least one of the fourth and fifth

membranes is a barrier membrane capable of controlling substantial bulk movement of liquid under the influence of an electric field, and wherein at least one of the fluids communicated to the electrode zones and the third interstitial volume contains at least the concentrated sample from at least one of the first and second interstitial volumes wherein the at least one barrier membrane controls substantial bulk movement of any liquid into and out of the third interstitial volumes so as to obtain at least a partially concentrated product in the third interstitial volume.”

Support is provided for each of the claim amendments, for example, at page 13, lines 16-25 of the application as originally filed. Applicants respectfully traverse the rejection under Section 103(a) because neither Bourat nor Ogle, individually or in combination, teach or suggest all the limitations of independent claims 1, 12, 23, 34, 36 and 38. Specifically, neither Bourat nor Ogle show or describe an apparatus or its method of use wherein one membrane is a barrier membrane capable of controlling substantial bulk movement of liquid into and out of an interstitial volume so as to obtain at least a partially concentrated product in the interstitial volume, and wherein the other membrane is an electrophoresis separation membrane having a defined pore size. Moreover, neither Bourat nor Ogle is capable of separating a sample in addition to allowing concentration of the sample during an electrophoresis separation. Because neither Bourat nor Ogle show or describe the barrier and electrophoresis separation membranes as claimed, Bourat and Ogle, alone or in combination, fail to teach or suggest each and every claim element and therefore fail to teach the claimed invention as whole. Accordingly, a *prima facie* case of obviousness cannot be established. *See* MPEP § 2142. Applicants respectfully request withdrawal of the rejection.

Bourat is directed to a force flow system. Forced flow electrophoresis involves

the separation, in an aqueous medium, of compounds which are mobile in an electric field. Forced flow electrophoresis also involves placing the fractionation apparatus under pressure to establish a hydrostatic pressure difference on either side of the membranes. *See, e.g., Bourat*, col. 5, lines 43-46; col. 10, line 61 to col. 11, line 13; and col. 12, lines 14-16. In contradistinction, *Ogle* is directed to an apparatus for free flow electrophoresis. *See Ogle* at page 2, lines 2-3. The Examiner has proposed to modify the apparatus of *Bourat* with the separation membrane 22 as taught by *Ogle* to reach Applicants' claimed invention. *See* Detailed Action of Office Action dated 6/18/2004 at page 5. In addition, the Examiner asserts that the claimed "invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the disclosure of the *Bourat* patent with the teachings of the *Ogle* reference, because the *Ogle* reference teaches that such use of the electrophoresis membrane would allow the purification of the macromolecules as claimed." *See* Detailed Action of Office Action dated 12/29/2004 at page 3.

Applicants respectfully submit that there is no suggestion or motivation in the references themselves or in the knowledge generally available to one of ordinary skill in the art to combine *Bourat* and *Ogle* so as to reach Applicant's claimed invention. Specifically, Applicants contend that to use the separation membrane of *Ogle* in the apparatus of *Bourat* would render *Bourat* unsatisfactory for its intended purpose. *Ogle* discloses a lattice comprising an array of spaced parallel members 241, 242, in which the members are rounded. *See Ogle* at page 8, lines 20-23, FIGS. 11 & 12. According to *Ogle*, "[t]he absence of any sharp edges helps prevents damage to the separation membrane. Further, any increased pressure on the separation membrane 22 will increase the area of contact between the curved lattice members and the

separation membrane providing extra support to the separation membrane.” *Id.* at page 8, lines 24-28. The apparatus of Bourat does not employ a lattice as described in Ogle, but instead describes “[g]rids consisting of, for example, two webs of crossed and heat sealed yarns, made of polyethylene or an equivalent inert plastic They serve the purpose of supporting the membranes, of separating the electrolyte flows uniformly in each compartment and of causing turbulences which are necessary for good exchange.” Bourat, col. 6, lines 36-43.

Applicants contend that to use the membranes taught by Ogle in the apparatus of Bourat would render Bourat unsatisfactory for its intended purpose because to place the membrane taught by Ogle in the apparatus of Bourat, in the absence of the lattice as taught by Ogle, would cause the membrane to burst or tear when placed under the pressure in the forced flow apparatus of Bourat. Accordingly, “[i]f proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.” See MPEP § 2143.01 at page 2100-131 (citing *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)). Further, there is no suggestion in the references to modify the grid of Bourat with the lattice of Ogle. *Id.* (“The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.”). In light of the argument that the apparatus of Bourat would fail if modified with the membranes of Ogle, there is arguably no reasonable expectation of success in combining the references as required for a *prima facie* case of obviousness. *Id.* at page 2100-132. “Evidence showing there was no reasonable expectation of success may support a conclusion of nonobviousness.” *Id.* at page 2100-133. Alternatively, to modify Bourat with the membrane of Ogle and to operate Bourat without the

hydrostatic pressure would change the principle operation of Bourat. “If the proposed modification or combination of the prior art would change the principle operation of the prior art invention being modified, then the references are not sufficient to render the claims *prima facie* obvious.” *Id.* at page 2100-132.

Because the combination of Bourat and Ogle would either render Bourat unsatisfactory for its intended purpose or otherwise change its principle operation, and because there is arguable no reasonable expectation of success to combine Bourat and Ogle, there is no suggestion or motivation to combine the references. Accordingly, a *prima facie* case of obviousness cannot be established. MPEP § 2143. Applicants respectfully request withdrawal of the rejections. Claims 2-8, and 10-11 depend from independent claim 1; claims 13-19 and 21-22 depend from independent claim 12; claims 24-30, and 32-33 depend from claim 23; claim 35 depends from claim 34, claim 37 depends from claim 36; and claim 39 depends from claim 38. Therefore these dependent claims should be allowed for at least the same reasons.

CONCLUSION

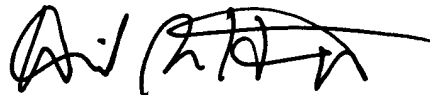
In view of the foregoing, Applicants believe the amendments to the claims place the claims in condition for allowance, or at least better form for appeal, and respectfully request reconsideration and the timely allowance of pending claims 1-8, 10-19, 21-30, and 32-39.

Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution.

EXCEPT for issue fees payable under 37 C.F.R. 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account 50-0310.

This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. 1.136(a)(3).

Respectfully submitted,
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